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# **ERC Team**

## **Meeting Minutes**

**Job No. 22192**  
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**SUBJECT** GROUNDWATER/VADOSE ZONE INTEGRATION PROJECT MEETING -  
OCTOBER 2, 2000

**TO** Distribution

**FROM** Michael J. Graham, Groundwater/Vadose Zone Integration Project Manager

**DATE** October 19, 2000

**ATTENDEES**

See Attached List

**DISTRIBUTION**

Attendees  
GW/VZ Distribution List  
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**NEXT GW/VZ INTEGRATION PROJECT OPEN MEETING:**

Next Meeting: Monday, October 16, 2000 – 1-3 p.m.  
Location: Bechtel Hanford, Inc., Assembly Room (Badging Required)  
Local Call-In Number: (509) 376-7411  
Toll Free Call-In Number: (800) 664-0771

**MEETING MINUTES:**

A Groundwater/Vadose Zone (GW/VZ) Integration Project Open Meeting was held on October 2, 2000, in Richland, Washington, at the Bechtel Hanford, Inc. (BHI) Assembly Room.

**PROJECT REPORT:**

**General Project Update (Michael Graham)**

There's a great deal of interest in the Partitioned Inter-Well Tracer Testing (PITT). We've got a good handle on what it'll cost to implement this test. We have top-notch people reviewing and providing input on liability to implement that plan. Their report is due around October 20, 2000, and Innovative Treatment Remediation Demonstration (ITRD) had a conference call to discuss when they can get together to discuss the plan. That may be in early November. They are trying to get to a decision point. Then, peer review and ITRD meet again. I'm encouraging that be a decision-making meeting.

QUESTION: Is Mike Kavanaugh part of that review team?

ANSWER: Yes. And Drs. Lorne Everett and David McWhorter.

Regarding the Integration Project Expert Panel (IPEP) Meeting at end of October, we are very close to having an agenda. I expect to have it in a few days. It won't be out to the public until the IPEP gives the okay.

QUESTION: What data do you hope to get from that activity – carbon tetrachloride?

ANSWER: The test will look for residual carbon tetrachloride in the vadose zone. The goal is to find where the source might be. As long as air can sweep through it, it would detect carbon tetrachloride.

There is an injection well and an extraction well, and the test occurs between those two wells. But, it won't tell us where along the path. It will show whether carbon tetrachloride was present or not in the swept area.

QUESTION: Is it a very expensive test? And, do the benefits justify review?

ANSWER: Yes, and that's why we have the review process in place.

As for the IPEP agenda, when we met last week, I thought the agenda was final. I handed it out.

It's very close to being finalized now. It's been rearranged from last week, but it hasn't changed in theme.

QUESTION: Can they do something like Kovats indexes in the PITT test?

ANSWER: I'm not familiar with that term, but I'll find out. They would do lab tests with site specific soil samples. They would do those tests to look for interferences, before partitioning tests.

QUESTION: The gas they're injecting is acting like a carrier, dragging it along, kind of like ion exchange?

ANSWER: I think they're non-reactive tracers.

QUESTION: The tracer material has little interaction with soil structure. It deabsorbs off the substrate.

COMMENT: We can talk more about this off-line.

RESPONSE: They look for the difference between the conservative tracer and the partitioning tracer.

COMMENT: Then, there is no need to ask about the Kovats index; they're going in a different direction.

QUESTION: What's the driver in the cost here?

ANSWER: The big cost for doing the drilling is to deepen the wells. Actually doing the test for the site is relatively inexpensive.

COMMENT: It does seem like a lot to put in two or three tracers.

RESPONSE: The cost is consistent with other sites that have done this type of test.

Under the area of ground water management and monitoring, we have continuation of In Situ REDOX (reduction/oxidation) Manipulation (ISRM). This coming year, we have 24 new wells scheduled. In 2002, we will have another 24 wells. In 2003, we will be decommissioning. The barrier will be complete over the next two years. There has been a big increase in field activities out in the field – a major well-decommissioning effort. The project has plans in place to decommission 70 – 90 wells along the river corridor. We are in process of writing specs and getting contractors in place to decommission those wells. As far as the Resource Conservation and Recovery Act (RCRA) drilling program, the five wells around the

tank farm should be complete by October 1, 2000, and is on schedule. We are in negotiations for the 2001 wells.

COMMENT: (Dib Goswami) Ecology gave a presentation to DOE on what Ecology thinks of the work in the 200 Area. We determined our priority based on data gaps. Tank farms scored highest. Other areas were assigned a lower priority, things like low level barrier grounds. We are still working on it. We proposed 35 wells for 2001. DOE will give their opinion of what they think sometime this week. We have not talked about funding yet.

QUESTION: Do you take core samples when you drill these wells?

ANSWER: Yes, we get core samples.

QUESTION: How do they relate to modeling? Are they spread over a wide area?

ANSWER: They are not for modeling information. Hydraulics drive ground flow. We are ringing single shell tank farms. Existing wells are going dry and gradients and directions are changing. Keep in mind we have soils already collected.

QUESTION: But, you don't have the hydrological data needed.

ANSWER: Last week we got a report on gravel samples. There is data available from the soil library. Samples are available.

Gary (McNair), do you have any comments on monitoring efforts?

ANSWER: (Gary McNair) We've got additional monitoring. We will take corrective action to what we watch. We are aiming for an historical look at trending rather than a manual set of data. We are at about the same as far as monitoring and sampling.

Regarding the 200 Area Solid Site and the remedial investigations, we are going to be in the field characterizing sites. We will continue to work on the Hanford Barrier and to look at other barriers. There is important work going into the next fiscal year.

QUESTION: Did you say you were planning to decommission 70 – 90 wells? Does the budget for that come from under here?

ANSWER: Yes. Maintenance refurbishment and decommissioning has the dollars. Are we keeping that in the same account?

ANSWER: Yes.

Tony (Knepp), do you have anything to add regarding River Protection Project Assessments (RPP) work?

The work is basically broken down into three areas: fieldwork, planning work, and analysis. Most fieldwork will be in the B-BX Tank Farms. We will drill two holes in groundwater. Additionally, there is some fieldwork going on at the S-SX Tank Farms. We are exploring the caissons and whether or not we

can get access to them to make estimates for moisture and contamination under the tanks.

Work is ongoing to plan the field investigation of T-TX-TY Area.

The analysis work will be on the S-SX Tank Farms and be complete at the end of FY01. We should be able to say why we believe it to be a good model based on the data gathered. We will convert the results of the model to risk assessment. We have a busy year planned.

When the Integration Project Expert Panel (IPEP) is here, we'll do a good recap of last year's work and discuss where we're headed this year.

For System Assessment Capability (SAC), the models and codes are done. Testing is complete. One thing we need to fix is the river model. Rev. 0 used existing codes as there were no existing codes on river. We are going to have to streamline that a little bit. All the data for running cases is just about done. Exercise codes, do history matching, and document results. By March we should have the results of Rev.0, formal reviews and documentation.

QUESTION: What will it calculate?

ANSWER: Risk in river, including ecological, human health, cultural and economic. All of which is documented in the design document. SAC is cranking right along. The team did a great job getting that together.

Science and Technology (S&T) is following a long roadmap. The work that they do is piggybacking on Tony's drilling and the 200 Area. That's a great benefit to core projects. The Environmental Management Science Program (EMSP) is having another workshop on October 28, 2000. It will be an open meeting. The principal investigators are coming in and will help them stay on track with Hanford needs.

Another element of S&T was added this year, risk.

We are locking down our knowledge base in Characterization of Systems. The highlight across S&T, RPP, SAC and the 200 Area is in Inventory. We'll have the best handle on inventory for some key contaminants that Hanford has ever had. The inventory is well documented and reviewed. This points to the benefit of integrated efforts. Everybody is on same page. What we're using in SAC is what RPP is using. It's the best foundation on site for inventory. And we will come up with some good graphics.

We continue our outreach and meetings in Public Involvement. We've had specific opportunities to sit with small groups. We have learned that big workshops are not the best way to proceed.

#### **618-11 Burial Ground Update (Jane Borghese/Mike Thompson)**

Because of the relatively high groundwater tritium values in the single well (699-13-3A) that monitors the burial ground, the first thing we did was to go out to the 22 existing wells and take tritium samples. The numbers on tritium in the wells were consistent with past data. The tritium concentration in well 699-13-3A had not spread far. The next step was soil gas investigations. We used a geoprobe outside but adjacent to the burial ground and down gradient to get soil gas samples. Groundwater could not be reached with this technique. We were able to put in about 50 points. We analyzed the data for the ratio of helium 3 to helium 4. A ratio of one is representative of air. The ratio was about 4 at well 699-13-3A. Going down

gradient east, the ratio was 1.3 or less, one tenth of what we saw at the well. The highest number on the north side was 60. With that information in hand, we put out a backgrounder, which is attached to the agenda. We asked Bechtel and Pacific Northwest National Laboratory (PNNL) to come up with a recommendation of where to go next. The next step is to mobilize the drill rig out in area and collect at least 2 groundwater grab samples. One on the north side, adjacent to the high number and also east of the burial ground area. On the north side we plan to put in a couple of vertical clusters of soil gas points, extend soil gas probes westerly along the north boundary, and collect soil vapor tritium measurements. We will consult with the regulators with the data we get back.

QUESTION: (Dirk Dunning) Are you going to be doing a measuring or sampling for neon?

ANSWER: Not to my knowledge.

QUESTION: Are you seeing old air or soil uranium (based on the values of tritium, helium 3, helium 4 and neon)?

COMMENT: Dirk, are you looking at some literature?

RESPONSE: Yes.

Send me (Mike Thompson) a copy and I will take a look at it.

**National Academy of Sciences (NAS) (Michael Graham)**

We had our third meeting with NAS a few weeks back. There was a field trip, followed up with detailed presentations in the morning, and they had break out sessions in afternoon. We had some dialogue with a few of the members. They feel they are getting close to having the information they need to start writing the report. The plan is to have another meeting, probably in November. That will be predominantly a writing session with the academy. They may ask a couple of us to come in to answer a couple of questions or provide some clarification. Then, there will be two more writing sessions (possibly in January and March). The final report is expected in an April or May time frame. They have the information they need to do their job, they have good understanding of what the project is about. They will spread out from the road map and look at the project as a whole. I look forward to getting their feedback.

COMMENT: The tour was great. The exposure the Expert Panel has had compared to what they're going to write a report on seems inadequate.

RESPONSE: We can provide you with the information provided to them.

COMMENT: It almost seems premature – where should your S&T money be spent when they don't know what are the big drivers?

RESPONSE: They aren't going to be at that level. They're going to be up a notch.

COMMENT: Looks like their focus is on remediation technology, but you haven't established a good priority list of what needs remediating.

QUESTION: Whom do they owe their report to?

ANSWER: The Expert Panel. It'll be a formal glossy report with a formal review and everything else.

QUESTION: Have you seen the report from Tom Leshine of the University of Washington?

ANSWER: Yes, I thought it was a good report.

COMMENT: Sounded like his main concern was long-term stewardship. I had hoped he had more to think about.

RESPONSE: It was a good report, a strong approach to the DOE report. As for the schedule, the NAS is November 2-3, 2000, location to be determined.

**NOTES:**

GW/VZ Web Site location: <http://www.bhi-erc.com/vadose>

If you have questions or comments please contact Steve Sautter (509-372-9097) or Alison Kent (509-372-9192).

**ATTACHMENTS:**

- 1) GW/VZ Integration Project Two Month Look Ahead Calendar
- 2) Backgrounder, U.S. Department of Energy, Richland Operations Office, "New Sample Results From Ongoing Investigation Near Hanford's 618-11 Burial Ground", September 29, 2000.

**ATTENDEES:**

Marty Bensky – Tri-City Caucus

Jane Borghese – CHI

Don Clark - JAI

Dirk Dunning – ODOE

Dib Goswami - Ecology

Michael Graham – BHI

Mary Harmon - DOE

Mike Hughes - BHI

Kathy Huss – SAIC

Alison Kent – BHI

Tony Knepp - CHG

Fred Mann - FFS

Gary McNair - PNNL

Gordon Rogers – HAB

Virginia Rohay - CHI

Steve Sautter - BHI

Stan Sobczyk – NPT

Mike Thompson – DOE-RL

*GW/VZ INTEGRATION PROJECT*  
**OCTOBER 2, 2000 – DECEMBER 18, 2000**  
*THREE MONTH LOOK AHEAD CALENDAR*

<b>October 2</b>	GW/VZ Open Project Team Meeting BHI Assembly Room – 1-3 p.m. (Contact: Dru Butler)
<b>October 10</b>	HAB Environmental Restoration Meeting BHI Assembly Room – 8 a.m. – 4 p.m.
<b>October 16</b>	GW/VZ Open Project Team Meeting BHI Assembly Room – 1-3 p.m. (Contact: Dru Butler)
<b>October 23-24</b>	Oregon-Hanford Waste Board Hood River, OR
<b>October 25-27</b>	Integration Project Expert Panel Meeting BHI Assembly Room
<b>November 2-3</b>	Tentative NAS Meeting
<b>November 2-3</b>	HAB
<b>November 6</b>	GW/VZ Open Project Team Meeting BHI Assembly Room – 1-3 p.m. (Contact: Dru Butler)
<b>November 7</b>	HAB-ER
<b>November 13-16</b>	DOE-HQ Year End Review (Richland, WA)
<b>November 20</b>	GW/VZ Open Project Team Meeting BHI Assembly Room – 1-3 p.m. (Contact: Dru Butler)
<b>November 28-30</b>	EMSP FY2001 Vadose Zone Principal Investigator Workshop (EMSL, Richland, WA)
<b>December 4</b>	GW/VZ Open Project Team Meeting BHI Assembly Room – 1-3 p.m. (Contact: Dru Butler)
<b>December 6</b>	HAB-PI
<b>December 7-8</b>	HAB Meeting (Clackamas, OR)
<b>December 18</b>	GW/VZ Open Project Team Meeting BHI Assembly Room – 1-3 p.m. (Contact: Dru Butler)



-----Original Message-----

**From:** ^ERC Employee Information

**Sent:** Friday, September 29, 2000 10:13 AM

**Subject:** PRELIMINARY RESULTS OF ADDITIONAL TESTING NEAR HANFORD'S 618-11 BURIAL GROUND

# BACKGROUND

## U.S. DEPARTMENT OF ENERGY RICHLAND OPERATIONS OFFICE

The following message was issued to the news media:

For Immediate Release: September 29, 2000

### NEW SAMPLE RESULTS FROM ONGOING INVESTIGATION NEAR HANFORD'S 618-11 BURIAL GROUND

The U.S. Department of Energy (DOE) Richland Operations Office (RL) has obtained new sample results as part of its ongoing investigation into tritium contamination in the groundwater near an old radioactive burial site at Hanford. The recent sampling efforts are helping scientists from Pacific Northwest National Laboratory and Bechtel Hanford, Inc. identify both the source and extent of tritium contamination.

The new data comes from nearly 50 soil gas samples obtained adjacent to the burial ground showing two areas of high concentrations of the gas helium. This lighter-than-air gas is a natural byproduct of the radioactive decay process of tritium, and its presence indicates a nearby tritium source. The high helium concentrations were found adjacent to the groundwater sampling well that yielded the initial high groundwater readings in January 2000 and along the northern edge of the burial site.

These findings provide the basis for the next phase of the investigation. This includes obtaining additional soil gas samples and two groundwater samples. The results of the additional tests will help determine if the helium is coming from a tritium source buried in the waste site or from tritium contamination in the groundwater.

The 618-11 Burial Site is located adjacent to the Energy Northwest reactor complex and is about 3.5 miles from the Columbia River. The January 2000 sample results showed tritium levels in excess of 8 million picocuries per liter (pCi/L). The drinking water standard for tritium is less than 20,000 pCi/L. Tritium is a

radioactive contaminant that moves with the groundwater. Its radioactivity decays by half every 12.3 years.

Upon learning of the elevated tritium levels, RL developed and implemented sampling plans to identify the size, direction, concentration and source of the tritium plume. Workers sampled existing groundwater wells upstream and downstream from the burial site to determine if the high tritium levels in the area adjacent to the burial site had migrated toward the Columbia River. Those samples showed levels consistent with past tritium levels - - far lower than the initial sample adjacent to the burial ground.

The burial ground was used from 1962 to 1967 for the disposal of radioactive waste. This waste was generated from activities in the 300 Area including fuel fabrication for Hanford's reactors and the research and testing of plutonium and nuclear fuel. The well had not been previously sampled for tritium because historical records did not indicate waste placed there would include tritium. However, as part of an ongoing site wide tritium study, tritium was added to the analysis in 1999. May 1999, the sample information was entered into the Hanford data system documenting Hanford's well-known tritium plume, which extends from the 200 Area to the river. Other samples taken near the burial ground show concentrations ranging from 230 to 100,000 pCi/L.

The surface of the burial ground was stabilized in 1983. In 1993, an expedited cleanup (response action) was proposed; however, because of the high cost and the risk involved in removing the highly contaminated waste, the cleanup action did not proceed. Cleanup has been delayed, in part, to allow time for new waste treatment technology development and for construction of a remote-handled waste facility to characterize and package the waste.

# # #

RL 00-098.bkgrd